CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

May 18, 2001 / Vol. 50 / No. 19

MMWR™
MORBIDITY AND MORTALITY
WEEKLY REPORT

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Public Health and Injection Drug Use

This issue of *MMWR* focuses on injection drug use and highlights ways that state and local health departments monitor injection drug use-related health issues and develop interventions to prevent substance abuse and infections among injection drug users (IDUs). Substance abuse and addiction are major underlying causes of preventable morbidity and mortality in the United States (*1*). The risks increase when illicit substances are injected, which contributes to multiple health and social problems for IDUs, including transmission of bloodborne infections (e.g., human immunodeficiency virus [HIV] and hepatitis B and C infections) through sharing unsterile drug injection equipment and practicing unsafe sex (*2*). In the United States, approximately one third of acquired immunodeficiency syndrome cases (*3*) and one half of new hepatitis C cases (*4*) are associated with injection drug use. Fatal drug overdoses also contribute to death among IDUs (*5*). Although the number of persons who inject illicit drugs (primarily heroin, cocaine, and amphetamine) is not available, approximately one million persons in the United States are active IDUs (*6*).

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Trends in Injection Drug Use Among Persons Entering Addiction Treatment — New Jersey, 1992–1999

Injection drug use is associated with high risk for transmission of bloodborne infections, including human immunodeficiency virus (HIV) and hepatitis B and C. Since 1993, the proportion of persons admitted to New Jersey addiction treatment centers for illicit drug use who reported injecting drugs has increased, reversing a decline that began in approximately 1980 (*1*; Community Epidemiology Work Group, unpublished data, 2000). This report summarizes an analysis of trends in injection drug use among persons admitted to New Jersey addiction treatment programs during 1992–1999; the findings suggest substantial increases in injection use among young adult heroin users throughout the state and an increase in heroin use among young adults who reside in suburban and rural New Jersey.

New Jersey's Alcohol and Drug Abuse Data System (ADADS) provided data for this report, including demographic information, client reports of substance use before entering treatment, and whether the client usually injected drugs (ADADS, unpublished data, 1999). Data were analyzed for clients admitted during 1992–1999 who reported using heroin and/or cocaine; admissions to inpatient detoxification programs were excluded. For this analysis, clients were categorized as 1) heroin users who did not use cocaine, 2) cocaine users who did not use heroin, and 3) users of both heroin and cocaine. To examine geographic patterns of heroin use and injection drug use, New Jersey cities, boroughs, and townships were categorized as either 1) urban areas including major cities (i.e., Newark, Paterson, Jersey City, Elizabeth, Camden, and Trenton) and other urban centers and surrounding areas (e.g., Atlantic City, New Brunswick, East Orange, and Hoboken) or 2) suburban and rural areas (Eagleton Institute of Politics, Rutgers University, unpublished data, 1994).

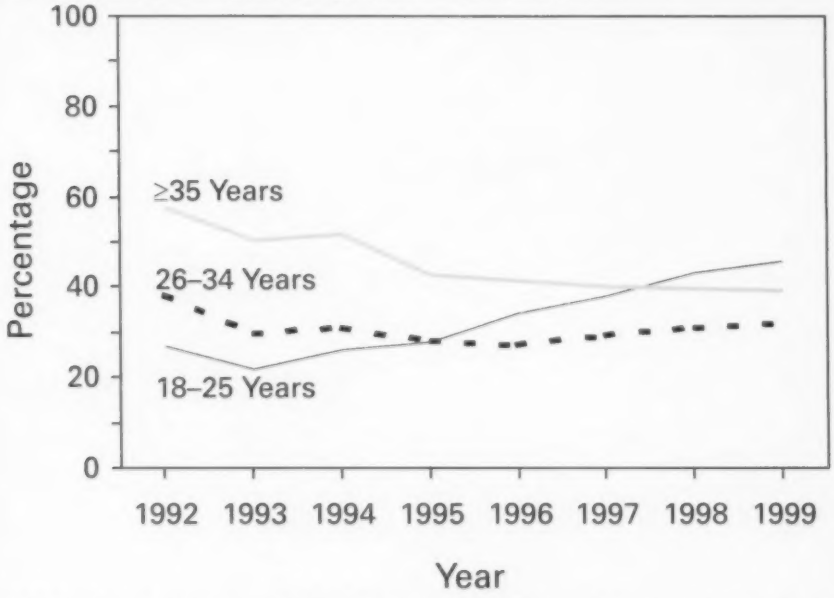
From 1980 through the early 1990s, the proportion of users who injected heroin, cocaine, and both drugs declined (*1*; Community Epidemiology Work Group, unpublished data, 2000; ADADS, unpublished data, 1999; and New Jersey Department of Health and Senior Services, unpublished data,1991). In 1995, the proportion of heroin users reporting injection began to increase. The proportions who reported injecting drugs were, respectively, for heroin/cocaine, 43% (2810 who injected of 6514 admitted) in 1995 and 45% (2270 of 5074) in 1999; for heroin/no cocaine, 31% (3401 of 10,990) in 1995 and 37% (3796 of 10,386) in 1999. The proportions for cocaine/no heroin users were small in both years, 2% (282 of 11,609) and 2% (144 of 8142).

The largest increases in the proportion of heroin/no cocaine and heroin/cocaine users who reported injecting were among clients aged 18–25 years, with increases in injecting in this age group beginning in 1993 (Figure 1). Among clients aged 18–25 years, the increase was from 22% (587 who injected of 2709 admitted for heroin use) in 1993 to 46% (1326 of 2893) in 1999. In 1993 and 1999 among persons aged 26–34 years, 30% (1802 of 5990) and 32% (1744 of 5434) were injecting; among persons aged ≥35 years, 50% (2624 of 5209); and 39% (2997 of 7655) were injecting.

During 1993–1999, among persons aged 18–25 years, the patterns of admissions for treatment of heroin use were substantially different for those residing in urban areas compared with suburban/rural areas (Figure 2). Admissions for treatment of heroin use decreased among urban residents from 2018 in 1993 to 1076 in 1999 and increased among suburban/rural area residents from 691 to 1817. During this period, the number of young heroin users who reported injecting as their usual method of drug use increased

Trends in Injection Drug Use — Continued

FIGURE 1. Percentage of persons admitted* for heroin† use who reported injecting as their usual mode of drug use, by age group — New Jersey, 1992–1999



*Within the calendar year, unduplicated persons admitted to addiction treatment programs (excluding inpatient detoxification programs).

† A person who reports heroin as primary, secondary, or tertiary drug of choice with or without the use of other drugs and/or alcohol.

substantially among suburban/rural residents from 232 in 1993 to 920 in 1999; the number of injectors remained approximately the same among urban residents, from 355 in 1993 to 406 in 1999. The proportion of residents who reported injecting increased in both geographic groups from 33.6% in 1993 to 50.6% in 1999 for suburban/rural residents and from 17.6% to 37.7% for urban residents.

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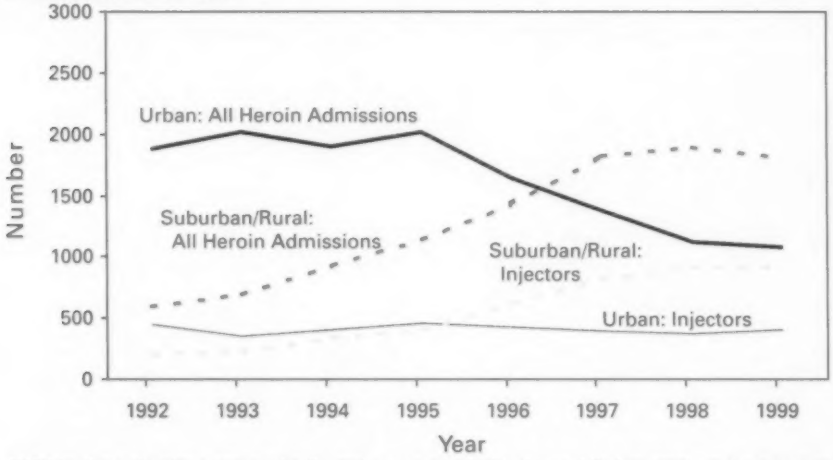
Editorial Note: The findings in this report suggest substantial increases in injection use among persons admitted to New Jersey treatment centers since 1995. By 1999, the number of persons aged 18–25 years admitted for treatment of heroin use and both the number and percentage who reported injecting were higher among residents of suburban/rural areas than urban areas.

Decreases in heroin use in urban areas may reflect risk reduction resulting from intensive efforts to reduce the transmission of HIV and acquired immunodeficiency syndrome in these communities (*2*). Another possible explanation for these changes is a

Trends in Injection Drug Use — Continued

FIGURE 2. Number of persons aged 18–25 years admitted* for heroin† use and number of them who reported injecting as their usual mode of drug use, by residential sector — New Jersey, 1992–1999



*Within the calendar year, unduplicated persons admitted to addiction treatment programs (excluding inpatient detoxification programs).

†A person who reports heroin as primary, secondary, or tertiary drug of choice, with or without the use of other drugs and/or alcohol.

substantial decrease in heroin purity. Decreased injecting among heroin users in the northeastern United States during the 1980s and early 1990s has been attributed, in part, to increases in heroin purity, from <10% to >50% (*3*). Purer heroin allows users to maintain their addiction by inhaling (snorting), which has a lower risk for transmission of HIV and other bloodborne infections than injecting. However, during the period of increases in the proportion of young heroin users in New Jersey who reported injecting, the purity of heroin continued to be >60%*. Another explanation may be population shifts from the cities to suburban and rural areas that may have contributed to the regional changes in heroin use and injection. However, U.S. census data for 1990 through 1998 indicate that suburban growth in New Jersey resulted from increases in the number of residents aged >35 years while the number of young adults in these regions declined.

The findings in this report are subject to at least three limitations. First, data on behaviors of drug users admitted to addiction treatment programs may not be generalizable to behaviors of New Jersey heroin users not admitted for treatment. Second, changes in numbers of drug users admitted to addiction treatment may not reflect changes in numbers of drug users in the community. Third, the proportion of heroin users admitted for treatment who inject could be affected by increased outreach efforts, special treatment initiatives, or changes in IDUs' interest in treatment. In New Jersey, except for the

*Among 23 U.S. cities surveyed in 1999, Newark and Philadelphia (the two largest heroin distribution centers for the area) had the highest mean heroin purity levels (72% in Philadelphia and 67.5% in Newark) (Drug Enforcement Administration, Department of Justice, unpublished data, 1999).

Trends in Injection Drug Use — Continued

decrease in availability of inpatient detoxification, there have been no changes in any of these factors.

In response to the trend in injection drug use, in 2000, the New Jersey Department of Health and Senior Services initiated substance abuse treatment services for young heroin users who resided in the eight suburban/rural counties with the highest proportion of injecting among young heroin users. This program underscores that public health agencies can use data from substance abuse treatment programs to detect emerging drug use and injection trends, to direct and extend prevention efforts to new populations, and to reach young adults and their sex partners before they begin injecting heroin and other drugs.

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Soft Tissue Infections Among Injection Drug Users — San Francisco, California, 1996–2000

Soft tissue infections (STIs), including abscesses and cellulitis, are a common complication of injection drug use. In 1997, 54 (32%) of 169 injection drug users (IDUs) in one San Francisco neighborhood had a drug-injection–related abscess or cellulitis (*1*). To characterize STIs among IDUs, data from San Francisco General Hospital (SFGH) discharge and billing records were analyzed. This report summarizes the results of that analysis and presents the case report of one IDU with an STI. The findings indicate that STIs are among the most common diagnoses among patients admitted to SFGH. Preventing STIs among IDUs in San Francisco will require coordinated action involving health-care providers, public health agencies, substance abuse treatment, community outreach, syringe exchange programs, IDUs, and community-based organizations.

SFGH inpatient and emergency department (ED) discharge and billing records for fiscal years (FYs) 1996–97 through 1999–2000 were searched for patients aged 15–74 years with primary diagnoses of abscess and/or cellulitis of the trunk, buttocks, or extremities (*International Classification of Diseases, Ninth Revision* [ICD-9]) codes 682.2–682.7 and 682.9). Records with primary diagnoses of ICD-9 codes corresponding to infections of the fingers, toes, face, neck, or head were excluded because infections in these areas are less likely to be related to drug injection. Data were abstracted about demographics, number of ED discharges and inpatient admissions, average length of inpatient stay, and charges for services.

To estimate the proportion of STIs that were related to injection drug use, 30 medical record numbers were selected randomly from the STI discharge lists for the ED and hospital for each FY from 1996–97 through 1999–2000. A total of 240 records were selected for drug-use history review; 20 records were excluded because of multiple visits and/or admissions.

Soft Tissue Infections — Continued

Case Report

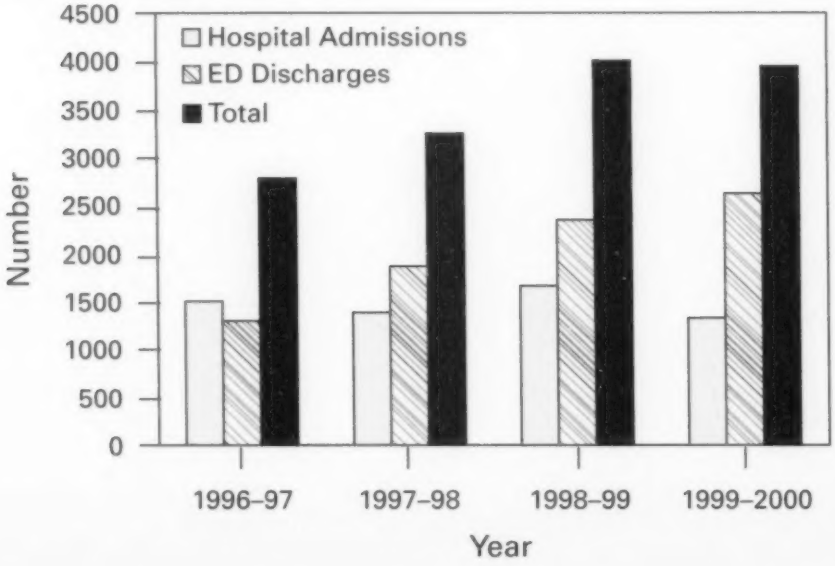
A 42-year-old woman with a 17-year history of injecting heroin presented to the SFGH ED with a low-grade fever and tenderness and swelling in the left deltoid region. Because her veins were scarred heavily by intravenous injection of heroin, she had been injecting intramuscularly for 10 years. She denied sharing injection equipment but admitted reusing her own syringes without cleaning them. Despite increasing pain and swelling in her left deltoid, she continued to inject into that area for the 2 weeks before admission. She was hospitalized for intravenous antibiotics and incision and drainage of the abscess.

Hospital Record Review

From FY 1996–97 through FY 1999–2000, the number of ED discharges for STIs increased 103%, from 1292 to 2619. The number of admissions to SFGH decreased slightly (11%), and the number of hospital admissions and ED discharges increased 41%, from 2787 to 3922 (Figure 1).

STIs at different anatomic sites were four of the top 13 inpatient discharge diagnoses at SFGH in FY 1999–2000; STIs at all sites was the leading cause of admission for medical or surgical treatment. Skin incision and drainage was the most common primary procedure on all inpatient records. During FY 1999–2000, 945 persons were admitted with a diagnosis of STI (average hospital stay: 3.2 days); 23% had two or more admissions,

FIGURE 1. Number of persons with soft tissue infections who were admitted to the hospital or discharged from the emergency department (ED), by fiscal year — San Francisco General Hospital, 1996–2000



Soft Tissue Infections — Continued

resulting in 1326 admissions. In FY 1999–2000, 7% of all SFGH admissions were for STIs. Of the 945 patients, 69% were male; median age was 42 years (range: 15–74 years); 64% were uninsured and 20% were receiving Medicaid.

Annual inpatient charges for treatment of STIs averaged $9.9 million per FY from 1996 to 2000. Because most patients admitted to SFGH were uninsured, San Francisco County was responsible for inpatient charges of approximately $5.1 million.

Of the 220 records selected for review, 188 were located. Of these, 132 (70%) documented injection drug use during the preceding 12 months (86% involved heroin). Two (1%) had histories of injection drug use more than 1 year before the onset of STI. Fifty-four (29%) had no history of drug injection; of these, 34 (18%) had a cause for the STI noted in the record, and 20 (11%) had no documented cause.

In July 1999, concern over the high rate of STIs among IDUs led to the formation of a multiagency STI task force that included representatives of SFGH administration, researchers, community clinicians, and the San Francisco Department of Public Health. The task force recommended the creation of a hospital-based STI clinic, community outreach to IDUs, expansion of substance treatment services, and standardization of community medical and surgical STI treatment with an emphasis on expanding community-based treatment and prevention.

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Editorial Note: The findings in this report indicate that many STIs in San Francisco are related to injection drug use and are a major cause of hospitalization. Some STIs among IDUs are complicated by tetanus (*2*), botulism (*3*), and myonecrosis (D. Bangsberg, Epidemiology and Prevention Interventions Center, SFGH, personal communication, 2000).

Possible contributing factors to the high rate of STIs among San Francisco IDUs include poor injection site hygiene, syringe reuse, intramuscular or subcutaneous routes of injection, and contaminated drugs. IDUs often contaminate needles by touching them to surfaces, mouths, or hands (*4*). Reuse of syringes may increase the chance of bacterial infections (*5*). San Francisco IDUs with STIs report frequent reuse of syringes that only they have used (*4*). State laws requiring a prescription to purchase syringes and making possession of syringes by IDUs a crime may contribute to the reuse of syringes (*6*). Subcutaneous and intramuscular injection of heroin (either intentional or inadvertent) is associated with STI (*1*). Use of alcohol to clean the skin before injection may protect against STI (*7*).

In San Francisco, the local health department pays most of the costs of caring for persons with STIs. In 1997, Federal Social Security Insurance (SSI) disability eligibility was amended so that drug and alcohol addictions were no longer qualifying disabilities (*8*). Because California's Medicaid program is linked to SSI, the restriction of federal disability eligibility has reduced the ability of local municipalities to obtain state and federal financial support for the medical costs of persons living with substance addiction.

In response to the high use of emergency and inpatient services, SFGH opened a surgical outpatient STI clinic in July 2000. As of February 2001, the clinic averaged 273

Soft Tissue Infections — Continued

patient visits and 170 procedures per month. For FY 2000–2001, the numbers of admissions and ED visits for treatment of STIs are projected to decline significantly compared with FY 1999–2000.

The findings in this report are subject to at least four limitations. First, the hospital and ED discharge records may be incomplete or inaccurate. Second, using only primary diagnoses underestimated the number of STIs. Third, because only a small percentage of medical records were reviewed, the proportion of STIs attributed to injection drug use is uncertain. Finally, hospital charges were estimated and are related but not equal to the cost to the hospital.

Primary prevention strategies to reduce STIs among IDUs include preventing initiation of injection drug use and increasing entry and retention of IDUs in substance abuse treatment (particularly methadone maintenance). For IDUs who continue to inject drugs, increasing access to sterile injection equipment and alcohol swabs and promoting hygiene (including hand washing, cleaning the injection site before injection, using a sterile syringe for every injection, and avoiding needle contamination) are important prevention goals. Secondary prevention strategies include promoting earlier medical and surgical treatment of STIs. Microbiologic testing of street samples of black tar heroin also may help identify the causes of injection-related STI. Ongoing research into the behavioral and biologic risk factors for STI may identify additional prevention interventions (*9*).

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Update: Syringe Exchange Programs — United States, 1998

Syringe exchange programs (SEPs) provide sterile syringes* in exchange for used syringes to reduce the transmission of human immunodeficiency virus (HIV) and other bloodborne infections associated with the reuse of potentially blood-contaminated

*"Syringe" refers to both syringes and needles.

Syringe Exchange Programs — Continued

syringes among injection drug users (IDUs) (*1*). This report summarizes a survey of 1998 SEP activities in the United States and compares them with 1994–1997 SEP activity surveys (*1–3*). SEPs are an increasingly common HIV prevention approach that offer a range of public health services in addition to syringe exchange.

In October 1999, staff from Beth Israel Medical Center and the North American Syringe Exchange Network (NASEN) mailed surveys to 131 SEP directors (compared with 68 in 1994–1995, 101 in 1996, and 113 in 1997) (*2–4*), and followed up with telephone interviews about syringes distributed/returned, services provided, and budgets and funding during 1998. The methods of this survey were the same as previous surveys of SEP activities (*2–4*).

Among the 131 SEPs contacted, 110 (84%) completed the survey. Some SEPs participated in the survey on the condition that their program data be reported only in aggregate. SEPs operated in 81 cities[†] and 31 states, the District of Columbia, and Puerto Rico[§]. The largest number of SEPs were in four states: 21 in California, 14 in New York, 12 in Washington, and nine in New Mexico. SEPs were classified by the number of syringes exchanged during 1998 (Table 1); 107 reported exchanging 19,397,527 syringes. The 12 largest programs exchanged 62% of all syringes[¶]. Referral to substance abuse treatment was provided by 104 (95%) of the 110 SEPs, 109 (99%) provided alcohol pads, 99 (90%) provided bleach, 108 (98%) provided male condoms, 80 (73%) provided female condoms, 104 (95%) provided referrals to substance abuse treatment, 70 (64%) provided on-site voluntary counseling and testing for HIV, 26 (24%) for hepatitis C, and 23 (21%) for hepatitis B. In addition, 21 (19%) provided on-site medical care, 18 (16%) provided hepatitis B vaccine, 17 (15%) provided tuberculosis screening, and 14 (13%) provided sexually transmitted disease screening. A median of 2.5 on-site services were provided by small, 3.0 by medium, 2.0 by large, and 7.0 by very large programs.

During 1998, SEPs operated at 534 sites averaging five sites per program (median: nine; range: 1–31). Sites included 202 health van stops, 59 shooting galleries, 56 sidewalk tables, 51 cars, 43 storefronts/indoor sites, 30 SEP workers on foot, 23 health clinics, and 70 other sites. Delivery of syringes and other risk-reduction supplies to residences or meeting spots was reported by 55 (50%) SEPs, and 94 (85%) allowed participants to

[†] Cities with multiple SEPs: Detroit, Michigan; Indianapolis, Indiana; Los Angeles, California; Minneapolis, Minnesota; New York, New York; Portland, Oregon; San Francisco, California; Seattle and Tacoma, Washington, and five others that asked that their program-specific information be kept confidential.

[§] States with SEPs: California (21); New York (14); Washington (12); New Mexico (nine); Connecticut (six); Massachusetts (five); Michigan, Oregon, Pennsylvania, Wisconsin (three each); Colorado, Illinois, Indiana, Minnesota, Montana, Ohio, Puerto Rico, Texas, (two each); and Alaska, Arizona, District of Columbia, Georgia, Hawaii, Kansas, Louisiana, Maryland, North Carolina, New Hampshire, New Jersey, Oklahoma, Rhode Island, Tennessee, and Utah (one each).

[¶] States with the largest SEPs: California (four); Washington (three); New York (two); and Illinois, Maryland, and Pennsylvania (one each). The largest SEPs were San Francisco AIDS Foundation, California (2.1 million syringes exchanged); Chicago Recovery Alliance, Illinois (1.5 million); Point Defiance AIDS Project, Tacoma, Washington (1.1 million); Seattle-King County Department of Public Health Needle Exchange Program, Seattle, Washington (1.0 million); Lower East Side Needle Exchange Program, New York, New York (0.9 million); Alameda County SEP, Oakland, California (0.8 million); Street Outreach Services, Seattle, Washington (0.7 million); Baltimore Department of Public Health, Maryland (0.7 million); and Clean Needles Now, Los Angeles, California (0.6 million). Three large SEPs that exchanged 2.8 million syringes during 1998 asked that their program-specific information be kept confidential.

Syringe Exchange Programs — Continued

TABLE 1. Number of syringe exchange programs (SEPs), number of syringes exchanged per SEP, total number of syringes, and percentage of total number of syringes, by program size category — United States, 1998

Size	No. syringes exchanged per SEP	No. SEPs	Total no. syringes exchanged	% syringes exchanged
Small	<10,000	30	108,136	1%
Medium	10,000–55,000	26	778,701	4%
Large	55,001–499,999	39	6,398,409	33%
Very large	≥500,000	12	12,112,281	62%
Total		**107**	**19,397,527**	**100%**

exchange syringes for persons other than themselves (secondary exchange). The 110 SEPs operated a mean of 20 hours per week per program (median: 22 hours; range: 1–140 hours). Sixteen SEPs had syringe shortages that caused four to close temporarily for 16 months (range: 2–8 months).

The combined operating budget of 105 SEPs was $8,567,662 (range: 0–$771,053; mean: $80,493; median: $38,000). A total of 51 SEPs in 15 states** and Puerto Rico received public funding of $5,992,032. From 1994–1995 to 1998††, the number of SEPs participating in the activities survey increased from 60 to 110 (83%), the number of cities with SEPs increased from 46 to 81 (76%), and the number of syringes exchanged increased from 8.0 million to 19.4 million (143%) (Table 2). Nine SEPs received no funds; however, they exchanged >185,000 syringes and provided other services using donated supplies and volunteers.

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Editorial Note: The findings of the 1998 survey indicated growth in the number of cities with SEPs and in the number of SEPs that provide prevention services for IDUs. Many SEPs, particularly the largest programs, serve as community-based HIV prevention and health promotion centers for IDUs, including IDUs at high risk for bloodborne infections (*5*). SEPs also provide additional services (e.g., influenza and pneumococcal vaccinations) (*6*). Hepatitis B vaccination at a SEP was an important part of the public health response to a hepatitis B outbreak among IDUs in Pierce County, Washington (*7*). State and local governments funded approximately two thirds of the total SEPs budget for 1998.

The findings in this report are subject to at least three limitations. First, the extent of SEP activity probably is underestimated because some of the known SEPs did not participate in this survey and others may exist that are not known to NASEN. Second, the

**SEPs received public funding in the following: 1) states: Arizona, California, Colorado, Connecticut, Hawaii, Illinois, Massachusetts, Maryland, New Mexico, New York, Oregon, Pennsylvania, Puerto Rico, Rhode Island, Washington, and Wisconsin; 2) counties: Clark, King, Pierce, Skagit, and Snohomish, Washington; Pima, Arizona; Boulder, Colorado; Cook, Illinois; and Multnomah, Oregon; and 3) cities: Berkeley, Los Angeles, and San Francisco, California; Chicago, Illinois; Baltimore, Maryland; Portland, Oregon; Seattle, Washington, and Milwaukee, Wisconsin.

†† From 1998 to March 2001, the number of SEPs known to NASEN increased from 131 to 168 (D. Purchase, NASEN, personal communication, 2001).

Syringe Exchange Programs — Continued

TABLE 2. Number of syringe exchange programs (SEPs), by characteristic — United States, 1994–1998

Characteristic	1994–1995	1996	1997	1998
No. known to North American Syringe Exchange Network	68	101	113	131
No. participating in survey	60	87	100	110
No. of syringes exchanged*	8.0	13.9	17.5	19.4
No. of cities with SEPs	46	71	80	81
No. of states (territories) with SEPs	20 (1)	28 (1)	30 (2)	31 (2)

* In millions.

information collected was self-reported and may be biased. Third, because 36 (33%) SEPs requested that their survey data be kept confidential, some data are included only as aggregate state-level information.

IDU access to sterile syringes can be augmented by methods other than SEPs (*8*). During 2000, New Hampshire, New York, and Rhode Island adopted new syringe laws that partially or completely removed the requirement for a prescription to purchase syringes and legal penalties for syringe possession. Physician prescription of sterile syringes to IDUs is another possible mechanism (*9*). Assuming availability of sterile syringes for IDUs who continue to inject is only one component of a comprehensive approach to HIV prevention for IDUs. Other HIV prevention components include substance abuse treatment, community outreach, tailored HIV counseling and testing, prevention of sexual transmission, services in correctional settings, primary drug prevention, and services for HIV-infected IDUs (*10*).

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Hepatitis B Vaccination for Injection Drug Users — Pierce County, Washington, 2000

Hepatitis B vaccination has been recommended for injection drug users (IDUs) since 1982, but vaccination coverage of IDUs remains low (*1*), and outbreaks of hepatitis B among IDUs continue to occur. An outbreak of hepatitis B primarily among IDUs in Pierce County, Washington, detected in April 2000, included 60 cases and resulted in three deaths among IDUs co-infected with hepatitis delta virus. A program to administer hepatitis B vaccine to IDUs was implemented to control the outbreak, and the number of cases identified decreased from 13 per month in May to two cases since November. This report describes a vaccination program during which IDUs accepted hepatitis B vaccination provided free of charge in community-based settings and illustrates how effective hepatitis B vaccination programs targeted at IDUs can be implemented through collaborations between departments of health and corrections and community organizations.

Because the first seven identified case-patients used the local syringe exchange program, hepatitis B vaccination clinics were established in May 2000 at syringe exchange sites and the county health department. Later, vaccination clinics were added at other sites, including the county jail, a soup kitchen, and a substance abuse treatment program for women. Community outreach workers, syringe exchange and methadone clinic staff, and a local media campaign promoted hepatitis B vaccination at these clinics. Hepatitis B vaccine, provided by the Washington State Department of Health, was offered at no charge and administered on a 0-, 1-, and 4-month schedule by the county health department. Participants received a $5 reimbursement for travel with each vaccine dose.

At the time the first vaccine dose was administered, recipients were tested for previous hepatitis B virus (HBV) infection using total antibody to hepatitis B core antigen (anti-HBc), and informed of the results when they returned for the second dose. Persons susceptible to HBV infection (total anti-HBc negative) or from whom a serum sample could not be obtained were advised to complete the vaccination series. Participants were given vaccination cards listing vaccine doses received and dates for subsequent doses.

A standard questionnaire administered by trained interviewers was used to collect demographic and risk behavior information from persons attending the vaccination clinics during May–July 2000. Rates of vaccination series (3 dose) completion as of January 2001 were calculated for persons who initiated vaccination during May–July.

During May–December, a total of 1981 persons initiated hepatitis B vaccination. The median age of vaccinated persons was 39 years (range: 16–77 years). Overall, 1205 participants (60.8%) reported ever injecting drugs. Of the 874 persons who completed the questionnaire and identified themselves as IDUs, 603 (69%) reported obtaining most of their syringes from the syringe exchange program. Of the 390 persons who completed the questionnaire and did not report a history of injection drug use, 287 (74%) reported other risk factors for HBV infection (e.g., sex with an IDU, multiple sex partners, being a man who has sex with men, or engaging in commercial sex work).

Of the 1733 persons who underwent prevaccination testing, 708 (40%) had serologic evidence of previous HBV infection, including 518 (51%) of 1014 IDUs tested and 111 (20%) of 549 persons tested who reported not injecting drugs (Table 1). As of January 2001, 673 (53%) of 1261 persons due for the second dose of vaccine and 216 (27%) of 813 persons due for the third dose had received it. Of the 683 IDUs who needed to complete the vaccine series, 372 (55%) of those due for the second dose and 130 (27%)

Hepatitis B Vaccination — Continued

TABLE 1. Number and percentage of persons who began hepatitis B vaccination, by selected characteristics — Pierce County, Washington, May–December 2000

Characteristic	All participants* (n=1981) No.	%	IDU participants (n=1205) No.	%
Immune to hepatitis B virus (total anti-HBc negative)/ Total tested	708/1733	(40.9)	518/1014	(51.1)
Received second dose†/ Due for second dose†	673/1261	(53.4)	372/683	(54.5)
Received third dose†/ Due for third dose†	216/813	(26.6)	130/488	(26.6)
Site of first dose of vaccine				
Syringe exchange	1051	(53.1)	704	(58.4)
Jail	301	(15.2)	148	(12.3)
Health department	174	(8.8)	109	(9.0)
Soup kitchen	315	(15.9)	167	(13.9)
Other	140	(7.0)	77	(6.4)

* Includes 1205 persons who reported injecting drugs, 390 who reported not injecting drugs, and 386 who did not report drug-use history.
† As of January 2001.

of those due for the third dose received it. The vaccination series completion rate among IDUs (27%) was similar to that of non-IDUs (28%).

Of the 1981 persons who initiated the hepatitis B vaccination series, 1051 (53%) received the first dose at the syringe exchange, 301 (15%) at the county jail while incarcerated, 174 (9%) at the health department, 315 (16%) at the soup kitchen, and 138 (7%) at other community sites (Table 1). Most persons (77%) received their second vaccine dose at the site where they initiated vaccination, including those who initiated the series in jail (82%).

Reasons for accepting vaccination were reported by 688 IDUs who completed the questionnaire. Reasons included knowing that persons were dying from hepatitis (24%), wanting to get vaccinated (17%), needing the financial reimbursement (15%), wanting to be tested for hepatitis B (14%), having received advice from syringe exchange staff (13%) or friends (10%), and other reasons (6%).

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Editorial Note: This report describes the successful implementation of a hepatitis B vaccination program for IDUs and other high-risk persons that involved public health departments and community-based organizations and provided hepatitis B vaccine to approximately 1900 persons. Assuming that half of the estimated 6000 IDUs residing in Pierce County (K. Mottram, Tacoma Pierce County Health Department, personal communication, 2001) are susceptible to HBV infection, at least 20% of this population received one or more doses of vaccine during the first 8 months of the program.

Although no efforts besides providing a vaccination card were made to remind participants to return for subsequent doses, approximately half of susceptible IDUs received a second vaccine dose. This second dose completion rate was similar to that reported among persons offered hepatitis B vaccination at a sexually transmitted disease (STD)

Hepatitis B Vaccination— Continued

clinic (*2*) and higher than that reported among IDUs offered vaccination at community-based sites that did not include a needle exchange program (*3*). The vaccination program in Pierce County is ongoing, and completion rates are expected to increase.

Although completion of the hepatitis B vaccination series is desirable, protective levels of antibody develop in 30% of adults after one dose and in 89% after two doses (*4*). Therefore, a substantial proportion of IDUs who have not completed the vaccination series probably are protected against HBV infection. Completion of the vaccination series should not be considered a prerequisite for initiating vaccination in high-risk persons.

Vaccination of IDUs to prevent HBV infection presents substantial challenges. Approximately 70% of IDUs are infected within 5 years of initiating injection drug use (*5*), and prevention of HBV infections in this risk group requires vaccination soon after the initiation of risk-taking behaviors. However, many IDUs lack health insurance or a regular source of medical care and receive care in settings where vaccination is not routinely offered (e.g., emergency departments) (*6*). In addition, many medical providers do not ascertain a history of injection drug use or offer hepatitis B vaccination to IDUs (*7*).

Relatively high vaccination coverage levels can be achieved among IDUs participating in harm reduction services such as syringe exchange programs. For example, pneumococcal and influenza vaccination was accepted by 86% of IDUs at a syringe exchange program in New York City (*5*). Offering hepatitis B vaccine at nontraditional sites such as syringe exchange programs and jails (*3*) and providing modest monetary incentives (*8*) can increase hepatitis B vaccination coverage among IDUs. Although the outbreak may have increased concern among IDUs about the risks for HBV infection, approximately 75% of IDUs who attended the vaccination clinics reported reasons other than awareness of the outbreak as their motivation for getting vaccinated. This finding suggests that hepatitis B vaccination for IDUs also could be successfully incorporated into syringe exchange programs in nonoutbreak settings.

The findings in this report are subject to at least two limitations. First, because the data on drug-use practices were self-reported, they may be inaccurate and the proportion of IDUs that attended the vaccination clinics may be underestimated. Second, most IDUs who were vaccinated participated in a syringe exchange program. The results of this program may not be generalizable in settings that lack such access to IDUs.

This report illustrates how hepatitis B vaccination programs targeted at IDUs can be implemented through collaborations between departments of health and corrections and community organizations and demonstrates the feasibility of vaccinating IDUs in various community settings. National programs to provide hepatitis B vaccine to high-risk persons are needed to apply these findings widely.

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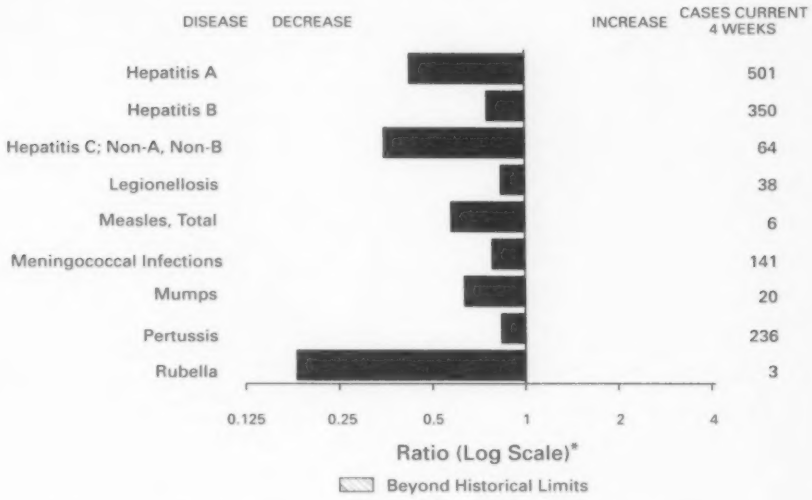
(Continued on page 399)

FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals ending May 12, 2001, with historical data



* No rubella cases were reported for the current 4-week period yielding a ratio for week 16 of zero (0).
† Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary of provisional cases of selected notifiable diseases, United States, cumulative, week ending May 12, 2001 (19th Week)

	Cum. 2001		Cum. 2001
Anthrax	-	Poliomyelitis, paralytic	-
Brucellosis*	20	Psittacosis*	4
Cholera	2	Q fever*	4
Cyclosporiasis*	35	Rabies, human	-
Diphtheria	1	Rocky Mountain spotted fever (RMSF)	49
Ehrlichiosis: human granulocytic (HGE)*	29	Rubella, congenital syndrome	-
human monocytic (HME)*	5	Streptococcal disease, invasive, group A	1,471
Encephalitis: California serogroup viral*	-	Streptococcal toxic-shock syndrome*	22
eastern equine*	-	Syphilis, congenital§	34
St. Louis*	-	Tetanus	6
western equine*	-	Toxic-shock syndrome	52
Hansen disease (leprosy)*	28	Trichinosis	5
Hantavirus pulmonary syndrome*†	3	Tularemia*	9
Hemolytic uremic syndrome, postdiarrheal*	24	Typhoid fever	75
HIV infection, pediatric*†	72	Yellow fever	-
Plague	-		

-: No reported cases.
*Not notifiable in all states.
†Updated monthly from reports to the Division of HIV/AIDS Prevention -- Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP). Last update April 24, 2001.
§Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending May 12, 2001, and May 13, 2000 (19th Week)

Reporting Area	AIDS		Chlamydia†		Cryptosporidiosis		*Escherichia coli* O157:H7*			
							NETSS		PHLIS	
	Cum. 2001§	Cum. 2000	Cum. 2001	Cum. 2000	Cum. 2001	Cum. 2000	Cum. 2001	Cum. 2000	Cum. 2001	Cum. 2000
UNITED STATES	11,921	12,725	225,477	247,218	522	514	380	554	288	465
NEW ENGLAND	469	789	8,176	8,543	19	31	43	61	37	58
Maine	14	14	448	498	2	5	5	3	5	4
N.H.	13	11	408	380	-	2	8	4	6	4
Vt.	10	1	213	202	9	8	2	2	1	2
Mass.	271	526	3,565	3,658	3	9	19	31	15	25
R.I.	40	33	994	942	3	2	3	-	2	1
Conn.	121	204	2,548	2,863	2	5	6	21	8	22
MID. ATLANTIC	2,254	3,159	18,253	23,538	53	102	33	80	28	67
Upstate N.Y.	97	157	N	N	27	26	26	60	17	38
N.Y. City	1,028	1,930	10,071	10,077	24	69	-	6	1	3
N.J.	635	628	1,715	4,767	1	3	7	14	10	11
Pa.	494	444	6,467	8,694	1	4	N	N	-	15
E.N. CENTRAL	926	1,259	32,353	43,276	165	103	88	101	44	67
Ohio	167	172	3,926	11,318	44	18	30	19	19	12
Ind.	86	97	5,421	4,673	18	6	17	11	9	10
Ill.	433	803	8,701	12,619	1	15	11	32	7	25
Mich.	189	141	10,839	8,535	40	13	17	15	-	14
Wis.	52	46	3,466	6,131	62	51	13	24	9	6
W.N. CENTRAL	243	271	11,784	13,975	26	27	31	72	41	74
Minn.	47	47	2,305	2,936	-	4	8	10	19	30
Iowa	24	23	1,379	1,794	15	7	5	14	3	7
Mo.	117	123	4,105	4,714	5	6	6	25	9	18
N. Dak.	1	-	352	339	-	2	-	5	3	4
S. Dak.	-	3	677	647	3	3	4	2	3	2
Nebr.	16	19	877	1,335	3	2	-	10	-	9
Kans.	38	56	2,089	2,210	-	3	8	6	4	4
S. ATLANTIC	3,720	3,357	47,527	45,104	112	82	46	47	22	40
Del.	72	63	1,087	1,092	1	2	-	1	-	-
Md.	436	388	4,584	4,637	22	4	3	8	-	1
D.C.	297	264	1,317	1,181	7	-	-	-	U	U
Va.	270	237	6,574	5,468	7	3	9	10	7	10
W. Va.	28	19	847	755	-	-	1	2	-	2
N.C.	190	169	7,516	7,440	14	7	20	8	9	5
S.C.	250	256	4,469	3,638	-	-	2	2	2	2
Ga.	392	355	9,440	9,144	40	50	4	5	2	10
Fla.	1,785	1,606	11,693	11,749	21	16	7	11	2	10
E.S. CENTRAL	682	596	16,883	18,408	14	18	15	30	12	21
Ky.	121	80	3,170	2,883	1	-	1	10	3	8
Tenn.	220	259	5,260	5,293	2	3	9	11	8	11
Ala.	174	163	4,374	5,909	5	8	5	1	-	-
Miss.	167	94	4,079	4,323	6	7	-	8	1	2
W.S. CENTRAL	1,296	1,097	36,497	37,264	7	22	22	30	28	46
Ark.	81	68	2,845	2,202	2	1	1	4	-	3
La.	331	213	5,929	6,751	3	3	-	2	12	11
Okla.	67	67	3,670	3,300	2	2	8	5	8	3
Tex.	817	749	24,053	25,011	-	16	13	19	8	29
MOUNTAIN	510	444	11,849	14,426	43	29	41	47	27	29
Mont.	11	6	862	571	3	3	3	8	-	-
Idaho	7	9	619	687	5	3	5	7	-	4
Wyo.	1	2	260	279	-	3	1	3	-	2
Colo.	109	101	972	4,131	14	8	18	13	13	7
N. Mex.	40	50	2,055	1,808	8	1	2	2	2	2
Ariz.	202	141	4,946	4,598	1	2	7	12	7	11
Utah	48	48	318	948	10	7	3	1	4	1
Nev.	92	87	1,817	1,404	2	2	2	1	1	2
PACIFIC	1,821	1,753	42,155	42,684	83	100	61	86	49	63
Wash.	201	196	4,991	4,802	N	U	14	17	13	28
Oreg.	69	47	701	2,504	3	3	9	12	7	14
Calif.	1,526	1,456	34,261	33,168	79	97	33	50	27	14
Alaska	9	5	906	926	-	-	1	1	-	1
Hawaii	16	49	1,296	1,284	1	-	4	6	2	6
Guam	9	13	-	-	-	-	N	N	U	U
P.R.	408	284	2,090	U	-	-	-	3	U	U
V.I.	2	18	53	-	-	-	-	-	U	U
Amer. Samoa	-	-	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	U	U	U	U	U	U	U	U

N: Not notifiable. U: Unavailable. - No reported cases. C.N.M.I.: Commonwealth of Northern Mariana Islands.

* Individual cases can be reported through both the National Electronic Telecommunications System for Surveillance (NETSS) and the Public Health Laboratory Information System (PHLIS).

† Chlamydia refers to genital infections caused by *C. trachomatis*. Totals reported to the Division of STD Prevention, NCHSTP.

§ Updated monthly from reports to the Division of HIV/AIDS Prevention — Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention. Last update April 24, 2001.

TABLE II. (Cont'd) Provisional cases of selected notifiable diseases, United States, weeks ending May 12, 2001, and May 13, 2000 (19th Week)

Reporting Area	Gonorrhea		Hepatitis C; Non-A, Non-B		Legionellosis		Listeriosis	Lyme Disease	
	Cum. 2001	Cum. 2000	Cum. 2001	Cum. 2000	Cum. 2001	Cum. 2000	Cum. 2001	Cum. 2001	Cum. 2000
UNITED STATES	105,607	121,776	752	8,909	232	244	126	767	1,782
NEW ENGLAND	2,218	2,366	12	7	10	16	11	225	279
Maine	48	29	-	-	-	2	-	-	-
N.H.	46	35	-	-	3	2	-	42	18
Vt.	30	20	5	3	3	-	-	1	2
Mass.	1,094	946	7	3	3	9	7	46	105
R.I.	263	234	-	1	-	-	-	-	-
Conn.	737	1,102	-	-	1	3	4	136	154
MID. ATLANTIC	11,000	13,156	26	266	25	58	20	310	1,191
Upstate N.Y.	2,661	2,236	17	10	16	19	9	248	369
N.Y. City	4,255	4,197	-	-	4	8	3	-	41
N.J.	932	2,652	-	243	3	4	5	-	319
Pa.	3,152	4,071	9	13	2	27	3	62	462
E.N. CENTRAL	17,709	24,314	78	99	61	70	15	20	61
Ohio	2,723	6,252	5	3	34	30	4	19	7
Ind.	2,271	2,133	1	-	5	9	2	1	-
Ill.	5,423	7,543	3	11	-	8	-	-	5
Mich.	6,152	5,811	69	85	15	12	8	-	2
Wis.	1,140	2,575	-	-	7	11	1	U	47
W.N. CENTRAL	4,965	5,834	201	183	19	12	2	30	28
Minn.	733	1,144	-	1	1	1	-	19	11
Iowa	369	390	-	1	5	3	-	3	-
Mo.	2,576	2,806	197	175	9	5	1	4	11
N. Dak.	13	18	-	-	-	-	-	-	-
S. Dak.	81	92	-	-	-	1	-	-	-
Nebr.	270	467	1	2	3	-	-	2	1
Kans.	923	917	3	4	1	2	1	2	5
S. ATLANTIC	28,676	31,665	36	26	37	42	24	139	169
Del.	587	604	-	2	-	4	-	-	32
Md.	2,634	3,125	11	2	7	9	2	101	112
D.C.	1,112	821	-	-	1	-	-	7	-
Va.	3,163	3,677	-	1	6	3	4	21	13
W. Va.	194	225	4	3	N	N	2	1	4
N.C.	5,944	6,271	7	10	4	6	-	5	4
S.C.	3,240	3,219	3	-	1	2	2	1	-
Ga.	5,245	5,673	-	-	2	2	7	-	-
Fla.	6,557	8,050	11	8	16	16	7	3	4
E.S. CENTRAL	10,723	12,910	89	172	22	6	8	3	3
Ky.	1,240	1,177	3	16	6	4	2	2	-
Tenn.	3,408	4,023	27	34	9	1	3	1	2
Ala.	3,485	4,417	1	6	5	1	3	-	-
Miss.	2,590	3,293	58	116	2	-	-	-	1
W.S. CENTRAL	17,408	19,204	144	8,068	3	10	2	1	19
Ark.	1,742	1,164	3	2	-	-	1	-	-
La.	4,002	4,732	58	215	2	5	-	1	1
Okla.	1,716	1,437	2	2	1	1	-	-	-
Tex.	9,948	11,871	81	7,849	-	4	1	-	18
MOUNTAIN	3,681	3,768	126	25	19	14	12	3	1
Mont.	43	14	-	1	-	-	-	-	-
Idaho	29	31	1	-	-	1	-	1	-
Wyo.	17	24	101	1	1	-	-	1	1
Colo.	1,123	1,201	8	5	6	6	1	-	-
N. Mex.	346	376	9	5	1	1	3	-	-
Ariz.	1,419	1,521	4	10	6	2	3	-	-
Utah	33	104	-	-	3	4	1	-	-
Nev.	671	497	3	3	2	-	4	1	-
PACIFIC	9,227	8,559	40	63	36	16	32	36	31
Wash.	1,102	839	12	9	6	7	2	2	-
Oreg.	121	326	3	14	N	N	1	1	3
Calif.	7,661	7,115	25	40	27	9	29	33	27
Alaska	116	110	-	-	-	-	-	-	1
Hawaii	227	169	-	-	3	-	-	N	N
Guam	-	-	-	-	-	-	-	-	-
P.R.	653	201	-	1	2	-	-	N	N
V.I.	6	-	-	-	-	-	-	-	-
Amer. Samoa	U	U	U	U	U	U	-	U	U
C.N.M.I.	U	U	U	U	U	U	-	U	U

N: Not notifiable. U: Unavailable. -: No reported cases.

TABLE II. (Cont'd) Provisional cases of selected notifiable diseases, United States, weeks ending May 12, 2001, and May 13, 2000 (19th Week)

Reporting Area	Malaria		Rabies, Animal		Salmonellosis*			
					NETSS		PHLIS	
	Cum. 2001	Cum. 2000	Cum. 2001	Cum. 2000	Cum. 2001	Cum. 2000	Cum. 2001	Cum. 2000
UNITED STATES	305	380	1,763	2,231	7,884	9,548	6,659	9,358
NEW ENGLAND	23	13	218	244	631	581	579	612
Maine	2	1	29	57	86	40	65	31
N.H.	2	-	7	3	49	40	40	44
Vt.	-	2	32	15	27	40	30	50
Mass.	6	8	65	78	368	342	252	331
R.I.	1	-	25	18	32	24	52	43
Conn.	12	2	60	73	69	95	140	113
MID. ATLANTIC	55	73	272	348	724	1,421	1,022	1,599
Upstate N.Y.	15	20	213	241	284	298	269	415
N.Y. City	28	32	5	3	257	402	352	435
N.J.	8	11	53	56	121	404	159	301
Pa.	4	10	1	48	62	317	242	448
E.N. CENTRAL	33	46	10	20	1,149	1,395	947	1,300
Ohio	8	4	1	3	424	294	378	303
Ind.	9	2	1	-	116	151	99	161
Ill.	1	27	1	-	260	484	179	492
Mich.	15	10	7	10	220	228	192	252
Wis.	-	3	-	7	129	238	99	92
W.N. CENTRAL	14	19	115	201	421	490	519	673
Minn.	6	4	15	28	71	42	183	199
Iowa	1	1	22	29	82	65	79	72
Mo.	3	3	8	9	127	180	169	226
N. Dak.	-	2	17	52	1	14	16	23
S. Dak.	-	-	15	42	29	25	23	31
Nebr.	2	3	-	-	37	65	-	44
Kans.	2	6	38	41	74	99	49	78
S. ATLANTIC	77	81	764	775	2,043	1,568	1,289	1,356
Del.	1	2	12	13	25	32	27	36
Md.	34	33	92	147	217	212	206	238
D.C.	4	-	-	-	24	-	U	U
Va.	15	18	148	197	348	195	291	205
W. Va.	1	-	49	45	22	36	29	33
N.C.	1	9	219	189	346	241	175	196
S.C.	3	1	50	47	242	133	239	120
Ga.	3	2	110	91	272	271	249	396
Fla.	15	16	84	46	547	448	73	132
E.S. CENTRAL	9	13	72	72	460	466	292	376
Ky.	2	2	9	10	81	98	53	74
Tenn.	4	4	54	43	127	115	115	168
Ala.	3	6	9	19	163	147	109	112
Miss.	-	1	-	-	89	106	15	22
W.S. CENTRAL	5	18	94	395	551	1,036	440	619
Ark.	2	1	-	-	102	97	29	65
La.	1	4	-	-	89	181	168	128
Okla.	1	1	35	29	54	88	45	78
Tex.	1	12	59	366	306	670	198	348
MOUNTAIN	19	18	84	74	594	835	481	782
Mont.	2	1	14	23	25	34	-	-
Idaho	2	-	-	-	27	45	4	40
Wyo.	-	-	16	23	25	20	16	17
Colo.	9	10	-	-	180	258	166	248
N. Mex.	1	-	2	4	71	69	66	64
Ariz.	1	2	52	23	168	197	148	207
Utah	2	3	-	1	61	132	58	127
Nev.	2	2	-	-	37	80	23	79
PACIFIC	70	99	134	102	1,311	1,756	1,090	2,041
Wash.	2	6	-	-	129	139	205	223
Oreg.	3	20	-	-	41	114	84	150
Calif.	60	71	101	83	1,009	1,418	704	1,590
Alaska	1	-	33	19	14	21	-	19
Hawaii	4	2	-	-	118	64	97	59
Guam	-	-	-	-	-	-	U	U
P.R.	-	2	61	22	104	109	U	U
V.I.	-	-	-	-	-	-	U	U
Amer. Samoa	U	U	U	U	U	U	U	U
C.N.M.I.	U	U	U	U	U	U	U	U

N: Not notifiable. U: Unavailable. -: No reported cases.

* Individual cases can be reported through both the National Electronic Telecommunications System for Surveillance (NETSS) and the Public Health Laboratory Information System (PHLIS).

TABLE II. (Cont'd) Provisional cases of selected notifiable diseases, United States, weeks ending May 12, 2001, and May 13, 2000 (19th Week)

Reporting Area	Shigellosis* NETSS Cum. 2001	Shigellosis* NETSS Cum. 2000	Shigellosis* PHLIS Cum. 2001	Shigellosis* PHLIS Cum. 2000	Syphilis (Primary & Secondary) Cum. 2001	Syphilis (Primary & Secondary) Cum. 2000	Tuberculosis Cum. 2001	Tuberculosis Cum. 2000
UNITED STATES	3,740	6,065	1,898	3,900	1,860	2,361	3,643	4,476
NEW ENGLAND	58	109	63	91	13	25	111	135
Maine	2	4	1	-	-	-	5	3
N.H.	1	1	1	4	-	-	7	3
Vt.	2	1	1	-	-	-	2	1
Mass.	39	72	35	57	9	20	63	81
R.I.	6	9	9	10	1	1	10	12
Conn.	8	22	16	20	3	4	24	35
MID. ATLANTIC	335	935	298	587	124	106	725	770
Upstate N.Y.	150	308	12	138	4	4	98	93
N.Y. City	110	456	169	293	85	50	391	429
N.J.	40	102	52	75	17	21	166	183
Pa.	35	69	65	81	18	31	70	65
E.N. CENTRAL	554	1,083	303	646	274	515	378	473
Ohio	177	89	118	54	28	27	65	101
Ind.	97	226	17	36	68	172	28	48
Ill.	137	375	84	289	65	173	195	229
Mich.	114	287	75	252	104	119	60	62
Wis.	29	126	9	15	9	24	30	33
W.N. CENTRAL	375	381	352	343	70	35	150	178
Minn.	105	44	189	98	12	3	85	59
Iowa	81	81	70	98	-	10	9	13
Mo.	81	204	61	118	53	17	37	68
N. Dak.	9	2	1	1	-	-	-	-
S. Dak.	37	1	16	1	-	-	4	8
Nebr.	27	22	-	11	-	2	15	6
Kans.	35	27	15	16	5	3	-	24
S. ATLANTIC	630	679	183	235	715	771	657	786
Del.	4	5	4	4	2	2	-	2
Md.	42	36	15	11	84	120	72	82
D.C.	20	-	U	U	13	16	15	-
Va.	43	38	21	43	51	52	67	96
W. Va.	4	2	6	2	-	1	10	15
N.C.	144	42	54	24	168	220	90	109
S.C.	44	18	35	27	102	77	24	26
Ga.	80	86	44	76	99	130	121	187
Fla.	249	452	4	48	196	153	258	270
E.S. CENTRAL	352	283	149	211	209	351	208	294
Ky.	116	58	36	34	16	34	32	29
Tenn.	35	148	28	163	120	224	43	116
Ala.	93	13	78	11	35	45	100	96
Miss.	108	64	7	3	38	48	33	53
W.S. CENTRAL	518	1,036	266	329	248	331	481	707
Ark.	207	72	65	24	18	43	49	61
La.	27	100	67	51	51	77	-	46
Okla.	10	13	2	13	31	58	45	42
Tex.	274	851	132	241	148	153	387	558
MOUNTAIN	260	320	164	210	72	73	113	165
Mont.	-	2	-	-	-	-	-	4
Idaho	9	27	-	19	-	-	4	2
Wyo.	-	2	-	2	-	1	-	-
Colo.	56	58	45	30	13	4	29	20
N. Mex.	42	33	29	20	6	7	11	20
Ariz.	116	110	68	65	44	59	32	64
Utah	18	28	14	31	6	-	6	12
Nev.	19	60	8	43	3	2	31	43
PACIFIC	658	1,239	120	1,248	135	154	820	968
Wash.	62	226	76	263	22	20	65	70
Oreg.	15	90	32	54	2	4	35	30
Calif.	565	902	-	917	108	129	657	798
Alaska	2	6	-	3	-	-	14	29
Hawaii	14	15	12	11	3	1	49	41
Guam	-	-	U	U	-	-	-	-
P.R.	7	14	U	U	136	72	58	50
V.I.	-	-	U	U	-	-	-	-
Amer. Samoa	U	U	U	U	U	U	U	U
C.N.M.I.	U	U	U	U	U	U	U	U

N: Not notifiable. U: Unavailable. -: No reported cases.

*Individual cases can be reported through both the National Electronic Telecommunications System for Surveillance (NETSS) and the Public Health Laboratory Information System (PHLIS).

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending May 12, 2001, and May 13, 2000 (19th Week)

Reporting Area	*H. influenzae*, Invasive		Hepatitis (Viral), By Type				Measles (Rubeola)					
			A		B		Indigenous		Imported*		Total	
	Cum. 2001†	Cum. 2000	Cum. 2001	Cum. 2000	Cum. 2001	Cum. 2000	2001	Cum. 2001	2001	Cum. 2001	Cum. 2001	Cum. 2000
UNITED STATES	542	504	3,204	4,685	2,153	2,363	-	22	1	21	43	28
NEW ENGLAND	17	42	147	120	35	38	-	3	-	1	4	-
Maine	1	1	3	6	3	3	-	-	-	-	-	-
N.H.	-	6	5	11	7	8	-	-	-	-	-	-
Vt.	-	3	2	3	2	3	-	1	-	-	1	-
Mass.	16	24	46	48	3	1	-	2	-	1	3	-
R.I.	-	1	7	6	8	7	-	-	-	-	-	-
Conn.	-	7	85	46	12	16	-	-	-	-	-	-
MID. ATLANTIC	61	79	273	425	291	432	-	2	-	5	7	10
Upstate N.Y.	25	29	88	87	52	41	-	1	-	4	5	-
N.Y. City	21	26	121	181	168	205	-	-	-	-	-	10
N.J.	14	19	46	67	44	80	-	-	-	1	1	-
Pa.	1	5	18	90	27	106	-	1	-	-	1	-
E.N. CENTRAL	64	81	372	625	268	253	-	-	1	10	10	3
Ohio	28	26	96	121	48	37	-	-	1	3	3	2
Ind.	19	8	36	18	11	20	-	-	-	4	4	-
Ill.	10	29	95	258	24	38	-	-	-	3	3	-
Mich.	3	6	132	189	185	148	-	-	-	-	-	1
Wis.	4	12	13	39	-	10	-	-	-	-	-	-
W.N. CENTRAL	23	17	157	316	74	94	-	4	-	-	4	-
Minn.	11	7	12	44	10	7	-	2	-	-	2	-
Iowa	1	-	17	35	9	14	-	-	-	-	-	-
Mo.	8	7	42	171	37	50	-	2	-	-	2	-
N. Dak.	-	1	-	-	-	2	-	-	-	-	-	-
S. Dak.	-	-	1	-	1	-	-	-	-	-	-	-
Nebr.	2	2	20	16	8	16	-	-	-	-	-	-
Kans.	1	-	65	50	9	5	-	-	-	-	-	-
S. ATLANTIC	179	118	676	446	457	376	-	3	-	1	4	-
Del.	-	-	-	6	-	5	-	-	-	-	-	-
Md.	44	29	104	52	55	49	-	2	-	1	3	-
D.C.	-	-	18	-	3	-	-	-	-	-	-	-
Va.	10	24	48	54	45	54	-	-	-	-	-	-
W. Va.	4	2	2	35	11	2	-	-	-	-	-	-
N.C.	22	10	46	82	84	109	-	-	-	-	-	-
S.C.	4	3	23	14	6	3	-	-	-	-	-	-
Ga.	45	35	246	57	114	54	-	1	-	-	1	-
Fla.	50	15	189	146	139	100	-	-	-	-	-	-
E.S. CENTRAL	38	23	115	200	131	159	-	-	-	-	-	-
Ky.	1	9	13	20	15	31	-	-	-	-	-	-
Tenn.	16	11	53	73	47	67	-	-	-	-	-	-
Ala.	20	3	45	25	35	18	-	-	-	-	-	-
Miss.	1	-	4	82	34	43	-	-	-	-	-	-
W.S. CENTRAL	20	30	399	905	253	349	-	1	-	-	1	-
Ark.	-	-	23	75	40	38	-	-	-	-	-	-
La.	2	10	32	35	16	60	-	-	-	-	-	-
Okla.	18	19	66	120	34	36	-	-	-	-	-	-
Tex.	-	1	278	675	163	215	-	1	-	-	1	-
MOUNTAIN	88	55	306	320	224	175	-	-	-	1	1	9
Mont.	-	-	4	1	1	3	-	-	-	-	-	-
Idaho	1	2	27	13	6	4	-	-	-	1	1	-
Wyo.	4	-	15	3	16	-	U	-	U	-	-	-
Colo.	20	11	29	67	47	32	-	-	-	-	-	2
N. Mex.	12	13	10	35	59	54	-	-	-	-	-	-
Ariz.	41	23	160	157	69	60	-	-	-	-	-	-
Utah	3	4	27	19	10	5	-	-	-	-	-	3
Nev.	7	2	34	25	16	17	-	-	-	-	-	4
PACIFIC	52	59	759	1,328	420	487	-	9	-	3	12	6
Wash.	1	3	27	112	38	24	-	-	-	-	-	3
Oreg.	5	16	25	95	13	38	-	1	-	-	1	-
Calif.	24	24	695	1,105	358	417	-	7	-	1	8	3
Alaska	2	1	11	6	3	2	-	-	-	-	-	-
Hawaii	20	15	1	10	8	6	-	1	-	2	3	-
Guam	-	-	-	-	-	-	U	-	U	-	-	-
P.R.	-	2	41	138	28	91	-	-	-	-	-	-
V.I.	-	-	-	-	-	-	U	-	U	-	-	-
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	U	U	U	U	U	U	U	U	U	U	U	U

N: Not notifiable. U: Unavailable. -: No reported cases.
*For imported measles, cases include only those resulting from importation from other countries.
† Of 108 cases among children aged <5 years, serotype was reported for 55, and of those, eight were type b.

TABLE III. (Cont'd) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending May 12, 2001, and May 13, 2000 (19th Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 2001	Cum. 2000	2001	Cum. 2001	Cum. 2000	2001	Cum. 2001	Cum. 2000	2001	Cum. 2001	Cum. 2000
UNITED STATES	1,053	1,000	7	72	155	48	1,577	1,913	-	6	61
NEW ENGLAND	65	56	-	-	2	-	165	491	-	-	10
Maine	1	3	-	-	-	-	-	11	-	-	-
N.H.	7	4	-	-	-	-	16	54	-	-	1
Vt.	4	2	-	-	-	-	22	90	-	-	-
Mass.	37	37	-	-	-	-	119	309	-	-	8
R.I.	1	3	-	-	1	-	1	7	-	-	-
Conn.	15	7	-	-	1	-	7	20	-	-	1
MID. ATLANTIC	79	93	1	2	11	5	100	187	-	1	5
Upstate N.Y.	33	23	1	1	5	5	84	90	-	1	1
N.Y. City	20	25	-	1	3	-	6	34	-	-	4
N.J.	22	21	-	-	-	-	2	-	-	-	-
Pa.	4	24	-	-	3	-	8	63	-	-	-
E.N. CENTRAL	134	179	1	8	16	10	192	251	-	2	-
Ohio	47	32	-	1	7	2	119	145	-	-	-
Ind.	24	20	-	1	-	5	17	19	-	1	-
Ill.	20	47	1	6	4	3	21	24	-	1	-
Mich.	23	58	-	-	4	-	17	15	-	-	-
Wis.	20	22	-	-	1	-	18	48	-	-	-
W.N. CENTRAL	70	59	-	3	8	1	76	63	-	1	1
Minn.	10	3	-	1	-	-	17	35	-	-	-
Iowa	17	15	-	-	4	-	10	8	-	1	-
Mo.	23	31	-	-	2	-	33	8	-	-	-
N. Dak.	3	1	-	-	-	-	-	1	-	-	-
S. Dak.	3	4	-	-	-	-	3	1	-	-	-
Nebr.	5	3	-	-	1	-	2	3	-	-	1
Kans.	9	2	-	2	1	1	11	7	-	-	-
S. ATLANTIC	199	142	2	10	21	1	82	143	-	2	27
Del.	-	-	-	-	-	-	-	1	-	-	-
Md.	26	15	-	4	5	-	13	37	-	-	-
D.C.	-	-	-	-	-	-	1	-	-	-	-
Va.	21	26	-	2	4	-	10	13	-	-	-
W. Va.	4	4	-	-	-	-	1	-	-	-	-
N.C.	44	25	-	-	3	-	30	39	-	-	20
S.C.	20	11	-	1	6	-	15	16	-	-	5
Ga.	27	24	1	1	2	1	3	18	-	1	-
Fla.	57	37	1	2	1	-	9	19	-	1	2
E.S. CENTRAL	74	69	-	1	3	-	38	39	-	-	4
Ky.	13	13	-	1	-	-	11	25	-	-	1
Tenn.	26	31	-	-	2	-	16	5	-	-	-
Ala.	28	19	-	-	1	-	8	8	-	-	3
Miss.	7	6	-	-	-	-	3	1	-	-	-
W.S. CENTRAL	145	123	1	7	18	6	49	76	-	-	5
Ark.	11	6	-	1	1	-	3	8	-	-	-
La.	48	33	-	2	3	-	1	5	-	-	1
Okla.	17	18	-	-	-	-	1	7	-	-	-
Tex.	69	66	1	4	14	6	44	56	-	-	4
MOUNTAIN	55	49	-	6	10	23	743	305	-	-	1
Mont.	-	1	-	-	1	1	6	6	-	-	-
Idaho	5	6	-	1	-	-	160	36	-	-	-
Wyo.	1	-	U	1	1	U	1	-	U	-	-
Colo.	23	12	-	1	-	2	135	175	-	-	1
N. Mex.	8	6	-	2	1	4	49	51	-	-	-
Ariz.	9	16	-	-	-	16	375	25	-	-	-
Utah	5	6	-	-	4	-	12	7	-	-	-
Nev.	4	2	-	1	3	-	5	3	-	-	-
PACIFIC	232	230	2	35	66	2	132	358	-	-	8
Wash.	35	22	-	-	2	2	34	109	-	-	6
Oreg.	16	26	N	N	N	-	6	31	-	-	-
Calif.	172	173	1	19	55	-	83	195	-	-	2
Alaska	1	3	-	1	4	-	-	5	-	-	-
Hawaii	8	6	1	15	5	-	9	18	-	-	-
Guam	-	-	U	-	-	U	-	-	U	-	-
P.R.	1	4	-	-	-	-	-	1	-	-	-
V.I.	-	-	U	-	-	U	-	-	U	-	-
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	U	U	U	U	U	U	U	U	U	U	U

N: Not notifiable. U: Unavailable. - : No reported cases.

TABLE IV. Deaths in 122 U.S. cities,* week ending May 12, 2001 (19th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	65	45-64	25-44	1-24	<1	
NEW ENGLAND	604	429	112	43	9	11	65
Boston, Mass.	187	122	43	15	4	3	20
Bridgeport, Conn.	47	31	13	3	-	-	2
Cambridge, Mass.	15	12	3	-	-	-	2
Fall River, Mass.	28	26	2	-	-	-	3
Hartford, Conn.	44	26	10	6	2	-	4
Lowell, Mass.	19	17	1	-	1	-	2
Lynn, Mass.	18	17	-	1	-	-	3
New Bedford, Mass.	26	21	3	2	-	-	2
New Haven, Conn.	33	22	6	4	-	1	3
Providence, R.I.	54	39	8	4	-	3	4
Somerville, Mass.	2	1	1	-	-	-	-
Springfield, Mass.	50	31	10	5	2	2	4
Waterbury, Conn.	31	25	6	-	-	-	7
Worcester, Mass.	50	39	6	3	-	2	9
MID. ATLANTIC	2,192	1,552	411	148	54	26	115
Albany, N.Y.	42	31	8	1	1	1	7
Allentown, Pa.	16	14	2	-	-	-	1
Buffalo, N.Y.	100	68	15	11	4	2	5
Camden, N.J.	27	17	7	1	2	-	1
Elizabeth, N.J.	21	15	4	1	1	-	-
Erie, Pa.§	39	27	10	1	1	-	-
Jersey City, N.J.	42	31	7	4	-	-	-
New York City, N.Y.	1,128	776	232	86	25	9	45
Newark, N.J.	30	11	11	7	-	1	1
Paterson, N.J.	U	U	U	U	U	U	U
Philadelphia, Pa.	389	284	63	23	11	8	18
Pittsburgh, Pa.§	37	29	4	3	1	-	3
Reading, Pa.	20	17	3	-	-	-	3
Rochester, N.Y.	126	97	18	5	4	2	10
Schenectady, N.Y.	21	18	3	-	-	-	1
Scranton, Pa.§	27	23	4	-	-	-	3
Syracuse, N.Y.	86	68	9	4	3	2	13
Trenton, N.J.	24	13	8	1	1	1	3
Utica, N.Y.	17	13	3	1	-	-	1
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	1,586	1,081	308	108	49	40	106
Akron, Ohio	53	33	15	-	1	4	9
Canton, Ohio	39	33	5	1	-	-	7
Chicago, Ill.	U	U	U	U	U	U	U
Cincinnati, Ohio	103	83	11	5	2	2	12
Cleveland, Ohio	142	94	26	11	4	7	1
Columbus, Ohio	203	131	46	18	5	3	10
Dayton, Ohio	112	72	30	7	2	1	5
Detroit, Mich.	200	109	49	26	10	6	17
Evansville, Ind.	59	47	7	4	-	1	5
Fort Wayne, Ind.	77	61	10	1	3	2	4
Gary, Ind.	9	7	1	-	-	1	1
Grand Rapids, Mich.	38	25	10	1	-	2	6
Indianapolis, Ind.	181	124	33	17	5	2	9
Lansing, Mich.	62	47	7	3	3	2	10
Milwaukee, Wis.	99	65	21	4	5	4	3
Peoria, Ill.	43	30	5	4	2	2	2
Rockford, Ill.	60	40	15	2	3	-	3
South Bend, Ind.	58	43	13	2	-	-	-
Toledo, Ohio	U	U	U	U	U	U	U
Youngstown, Ohio	48	37	4	2	4	1	2
W.N. CENTRAL	892	598	209	38	26	21	85
Des Moines, Iowa	110	77	25	4	1	3	19
Duluth, Minn.	26	20	6	-	-	-	2
Kansas City, Kans.	45	34	4	4	3	-	5
Kansas City, Mo.	138	64	59	8	5	2	8
Lincoln, Nebr.	59	40	12	2	4	1	4
Minneapolis, Minn.	171	124	35	5	5	2	17
Omaha, Nebr.	77	56	13	6	1	1	11
St. Louis, Mo.	96	56	25	5	4	6	-
St. Paul, Minn.	71	54	13	1	1	2	8
Wichita, Kans.	99	73	17	3	2	4	11
S. ATLANTIC	1,263	832	266	112	26	27	68
Atlanta, Ga.	170	105	38	15	4	8	-
Baltimore, Md.	189	107	42	32	5	3	15
Charlotte, N.C.	95	67	15	9	-	4	14
Jacksonville, Fla.	146	101	22	15	5	3	13
Miami, Fla.	76	52	17	3	2	2	4
Norfolk, Va.	33	24	7	-	1	1	2
Richmond, Va.	62	36	15	7	1	1	3
Savannah, Ga.	57	36	16	4	1	-	2
St. Petersburg, Fla.	51	42	5	2	-	2	3
Tampa, Fla.	171	118	46	7	1	-	9
Washington, D.C.	200	129	44	18	6	3	3
Wilmington, Del.	13	13	-	-	-	-	-
E.S. CENTRAL	722	487	139	62	24	10	48
Birmingham, Ala.	179	117	33	21	7	1	17
Chattanooga, Tenn.	66	53	6	5	2	-	4
Knoxville, Tenn.	103	72	21	5	4	1	2
Lexington, Ky.	77	52	18	3	3	1	3
Memphis, Tenn.	194	126	40	19	3	6	15
Mobile, Ala.	51	34	7	7	2	1	1
Montgomery, Ala.	52	33	14	2	3	-	6
Nashville, Tenn.	U	U	U	U	U	U	U
W.S. CENTRAL	1,553	1,011	282	157	57	46	93
Austin, Tex.	92	67	14	4	7	-	9
Baton Rouge, La.	56	38	8	4	5	1	-
Corpus Christi, Tex.	62	38	17	3	1	3	1
Dallas, Tex.	186	111	36	21	8	10	13
El Paso, Tex.	63	48	8	5	1	1	6
Ft. Worth, Tex.	116	72	21	10	4	9	5
Houston, Tex.	381	223	78	50	20	10	16
Little Rock, Ark.	81	57	13	6	4	1	2
New Orleans, La.	83	49	16	14	2	2	5
San Antonio, Tex.	244	172	39	25	3	5	13
Shreveport, La.	82	63	13	5	-	1	11
Tulsa, Okla.	107	73	19	10	2	3	12
MOUNTAIN	1,095	753	214	75	29	23	94
Albuquerque, N.M.	144	93	34	13	3	-	16
Boise, Idaho	48	39	6	2	1	-	4
Colo. Springs, Colo.	59	43	11	3	1	1	7
Denver, Colo.	108	68	23	9	4	4	9
Las Vegas, Nev.	231	148	57	17	5	4	14
Ogden, Utah	30	23	3	2	1	1	2
Phoenix, Ariz.	171	115	26	17	7	6	14
Pueblo, Colo.	24	19	5	-	-	-	3
Salt Lake City, Utah	135	98	26	4	3	4	18
Tucson, Ariz.	145	107	23	8	4	3	7
PACIFIC	1,465	1,073	258	85	30	17	127
Berkeley, Calif.	18	14	2	1	1	-	-
Fresno, Calif.	106	76	21	6	2	1	4
Glendale, Calif.	9	7	-	1	1	-	1
Honolulu, Hawaii	83	63	16	2	-	2	6
Long Beach, Calif.	65	40	17	5	2	1	11
Los Angeles, Calif.	292	221	39	21	8	3	18
Pasadena, Calif.	29	20	8	-	1	-	6
Portland, Oreg.	U	U	U	U	U	U	U
Sacramento, Calif.	201	153	40	4	3	1	27
San Diego, Calif.	175	121	31	16	4	3	21
San Francisco, Calif.	U	U	U	U	U	U	U
San Jose, Calif.	190	145	26	10	4	5	13
Santa Cruz, Calif.	30	22	5	2	1	-	3
Seattle, Wash.	100	72	15	10	3	-	5
Spokane, Wash.	70	52	15	2	-	1	6
Tacoma, Wash.	97	67	23	5	-	-	6
TOTAL	11,372¶	7,816	2,199	828	304	221	801

U: Unavailable. -:No reported cases.
*Mortality data in this table are voluntarily reported from 122 cities in the United States, most of which have populations of ≥100,000. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.
†Pneumonia and influenza.
§Because of changes in reporting methods in this Pennsylvania city, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.
¶Total includes unknown ages.

Hepatitis B Vaccination — Continued

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Notice to Readers

National Hepatitis Awareness Month — May 2001

May is National Hepatitis Awareness Month. Hepatitis A, B, and C are the most common types of viral hepatitis in the United States. Hepatitis A, a disease transmitted through the fecal-oral route, occurs in epidemics both nationwide and in communities. Children are often the reservoir for infection, and during epidemic years, the number of reported cases has reached 35,000. Hepatitis A vaccine is the best protection against hepatitis A virus infection. During the late 1990s, when hepatitis A vaccine became more widely used, the number of cases reached historic lows.

Hepatitis B and C are both bloodborne diseases transmitted when blood or body fluids from an infected person enter the body of a susceptible person. Both hepatitis B and C can cause chronic infection that can lead to cirrhosis and hepatocellular carcinoma. The number of new hepatitis B virus (HBV) infections per year has declined from approximately 450,000 during the 1980s to approximately 80,000 in 1998. Hepatitis B vaccine is the best protection against infection with HBV. The greatest decline in HBV infections has occurred among children and adolescents as the result of routine hepatitis B vaccination. The number of hepatitis C virus (HCV) infections per year declined from approximately 240,000 during the 1980s to approximately 40,000 in 1998. No vaccine exists to prevent HCV infection. The infection is transmitted most often by injection drug use. Transfusion-associated cases occurred before blood donor screening, but currently HCV infection occurs in less than one per million transfused units of blood. Additional information about hepatitis A, B, and C is available from the CDC hepatitis hotline, telephone (888) 443-7232 or from CDC's Division of Viral Hepatitis at http://www.cdc.gov/hepatitis.

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☆U.S. Government Printing Office: 2001-633-173/48231 Region IV

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